page 12 the sesamoid bones are described as being "triangular." Their shape is more correctly "pyramidal." In connection with the description of the stomach of the ruminant, it would be an advantage if it were dealt with a little more fully. At present the description is far too meagre to be of any service. On p. 92 a list of hereditary diseases is given as scheduled by the Minnesota Stallion Law. Navicular disease is not included, although there is ample evidence of its hereditary nature. Laminitis is probably debatable as a hereditary disease, but it might be included in such a list of undesirable points with advantage, for the conformation so commonly associated with it is undoubtedly hereditary. The make-up of chapter xx. seems to us to have got rather mixed, for the two first paragraphs of p. 92 referring to heredity would be more appropriately placed to follow the paragraph on in-and-in breeding on p. 90, instead of being sandwiched between paragraphs referring to air.

The chapter on Actinomycosis is very good indeed, although we should be very sorry to see anybody, farmer or veterinary surgeon, resort to the caustic line of treatment as outlined on p. 149, especially as better results can be obtained by internal medication without producing the same amount of pain and suffering.

The illustrations throughout the book are excellent on the whole, though we fail to see any point in the inclusion of Figs. 74 and 75. In neither case is there anything shown at all diagnostic of milk fever.

We have no hesitation in recommending this book to agricultural students, for it should be of great service to them in the pursuit of their veterinary studies.

THE NATURE OF BONE.

Der Aufbau der Skeletteile in den freien Gliedmassen der Wirbeltiere. Untersuchungen in urodelen Amphibien. Von Prof. H. von Eggeling. Pp. vi + 324 + 4 plates. (Jena: Gustav Fischer, 1911.) Mk. 16.

At the present time the problems relating to the precise nature and mode of development of osseous tissue are being submitted to a searching scrutiny, and many of the most cherished beliefs of the majority of anatomists concerning the process of evolution and the real structure of bone are being threatened. Great activity is being displayed in investigating such problems as the mode of deposition of the calcium salts in the scleroblastema; the precise relationship of this process of calcification to the cells which in a sense determine it; whether there is any fundamental distinction between enchondral and intramembranous ossification; and whether bone is really the inert, unchanging tissue one is apt to think essential in a skeletal support.

These problems and others of a similar nature are forcing themselves upon the attention of workers in widely separated fields of biological inquiry. Surgeons like Sir William Macewen, as the result of clinical experience, have been led to question the current accounts of the development of bone; radiographers have been amazed to find how rapidly an acutely-inflamed bone reacts to the inflammatory process and becomes transparent to the X-rays; palæontologists have been puzzled to explain why obviously homologous bones in two amniotes may ossify in different ways, being enchondrous in one and intramembranous in another; anatomists find a difficulty in drawing a sharp line of distinction between enchondrous and intramembranous bone in certain parts of the skeleton; and embryologists and bio-chemists meet with many difficulties when they attempt to explain the precise mode of deposition of the calcium salts and the nature of the tissues in which they are laid down in the process of bone-formation.

Most of the work which hitherto has been done with the object of elucidating these and allied problems has been based mainly upon the investigation of the more highly organised and specialised Amniota. But Prof. von Eggeling has wisely selected for his research the simplest and least modified material he could obtain: he has devoted his whole attention to the investigation of certain specific features of the process of ossification in the limb-bones of the Urodele Amphibia, the most primitive vertebrates possessing limb-bones precisely comparable to those of the Amniota.

His results are presented in the form of this large monograph, packed with a mass of detailed information relating to the ossification of the limb-bones in twenty-four species, representing every family of the Urodela.

He gives a long and minute analysis of the voluminous literature relating to the structure and histogenesis of so-called coarse-fibred and fine-fibred bone; and then sets forth his own observations.

The most primitive osseous tissue is a product of the periosteum, but the dental cement and part of the placoid-organs of Selachians are of the same nature. It assumes its distinctive form by reason of the fact that the scleroblasts develop first amidst a coarse-fibred matrix of connective tissue.

At a later stage, both in phylogeny and ontogeny, buds of vascularised tissue eat their way through the sheath of coarse-fibred bone into the cartilaginous core; and in this loose delicate

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tissue fine-fibred bone becomes laid down in concentric layers, lining the canals which lodge the vascular material. This "marrow-bone" (*Markknochen*) represents the superstructure laid down upon the more ancient coarse-fibred bony foundation, perfecting its structure, and rendering it more efficient as a weight-bearer. The medullary cavity is formed by the anastomosis of the intrusive canals filled with highly vascular tissue, which forms the rudiment of the marrow.

A great deal of precise and suggestive information is given in regard to these and other matters, such as the phylogeny of the Haversian canals and the nature of epiphyseal centres of ossification.

The chief interest of the book lies in the support it gives to the growing conviction of the essential uniformity of the processes of ossification, although perhaps its author might not go so far as to admit this. G. ELLIOT SMITH.

OUR BOOKSHELF.

The Story of the Five Elements. By E. W. Edmunds and J. B. Hoblyn. (The Library of Modern Knowledge.) Pp. viii + 264. (London: Cassell and Co., Ltd., 1911.) Price 2*s.* 6*d.* net.

THIS book is of a type now becoming more common, an elementary account of science intended for "the intelligent general reader who, having a genuine interest in science, is nevertheless unable to follow up any one branch of it in close detail." To write such a book successfully a sound knowledge of the subject, a gift of attractive exposition, and a good literary style are necessary. These are evinced in a very satisfactory measure by the authors of the work before us. No serious misstatement has been noticed during perusal—nothing more important than the use of "dephlogisticated" for "phlogisticated" on pp. 70 and 89. The exposition is clear, and a fresh turn is given to the story of elementary chemistry by following the track of the ancient "elements." The language is not hackneyed, nor yet aggressively unconventional. A perusal of the book will not make a chemist, but it will give a just idea of chemistry to an intelligent reader; and to an elementary student, in the shackles of a traditional text-book, it will afford a salutary relief, a breath of fresher air. A. S.

An Introduction to Therapeutic Inoculation. By Dr. D. W. Carmalt Jones. Pp. xiv + 171. (London: Macmillan and Co., Ltd., 1911.) Price 3*s.* 6*d.* net.

THIS book, by one who is a pupil of Sir Almroth Wright and the director of the department of bacterio-therapeutics of a London hospital, may be taken as an authoritative guide to the inoculation method for the treatment of infective diseases. It is divided into two parts, the first dealing with the principles underlying the method, the second with its practical application. Stress is rightly laid on the importance of the exact diagnosis of the nature of an infection by bacteriological methods, and it can scarcely be doubted that in the future exact diagnosis of the condition and the treatment of the infection itself will become more and more laboratory procedures, the function of the clinician being to decide if the disease is an infective one, to aid the recognition of the disease by the use of physical methods of diagnosis, to invoke laboratory methods to assist in the diagnosis, to exercise a general control over the patient, and to treat the general condition of the patient and any complications that may arise.

Full directions are given for the estimation of the opsonic index, which, in spite of adverse criticism, is considered by the author to possess considerable value for diagnosis and treatment, and for the preparation of the vaccines necessary for the inoculation treatment. Finally, the practice of inoculation in the treatment of various infections is fully considered.

R. T. H.

The Babylonian Expedition of the University of Pennsylvania. Series A: Cuneiform Texts. Edited by H. V. Hilprecht. Volume xxix., Part i.: Sumerian Hymns and Prayers to God (*sic!*) Nin-ib from the Temple Library of Nippur. By H. Radau. Pp. x + 88 + 21 plates. (Philadelphia: Department of Archæology, University of Pennsylvania, 1911.)

ONE of the most interesting peoples of the ancient world was the Sumerian race, which founded the great civilisation of Babylonia. The cuneiform writing of western Asia was their invention, and the religious system of Babylon, which had so great an influence upon the Hebrew cult from which Christianity sprang, was originally theirs. Among the spoils of the American expedition to Nippur, in southern Babylonia, which are now being published under the editorship of Prof. Hilprecht, were a large number of the usual clay tablets inscribed with Sumerian hymns to the god Ninib. These are now translated and described by Herr Hugo Radau. That he has done his work well there can be no question, though we may not agree with all the conclusions he draws from his material. The non-Semitic Sumerian language, entirely different from the tongue of the Semitic Babylonians who borrowed the culture, including the script and religion, of the Sumerians, offers peculiar difficulties to the translator, and others may not always agree with the interpretation which Herr Radau gives to individual words and phrases of his texts; but the general sense of the originals is clear enough. Of the religious tone of these hymns, the best idea is to be derived from a perusal of them. We scarcely agree with the exaggerated estimates which their translator, perhaps pardonably, is often led into with regard to them, and his "macrocosmology" and "microcosmology" seem far-fetched. But of the main facts as expounded by him there is no doubt.

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